Trend Study 17-31-02

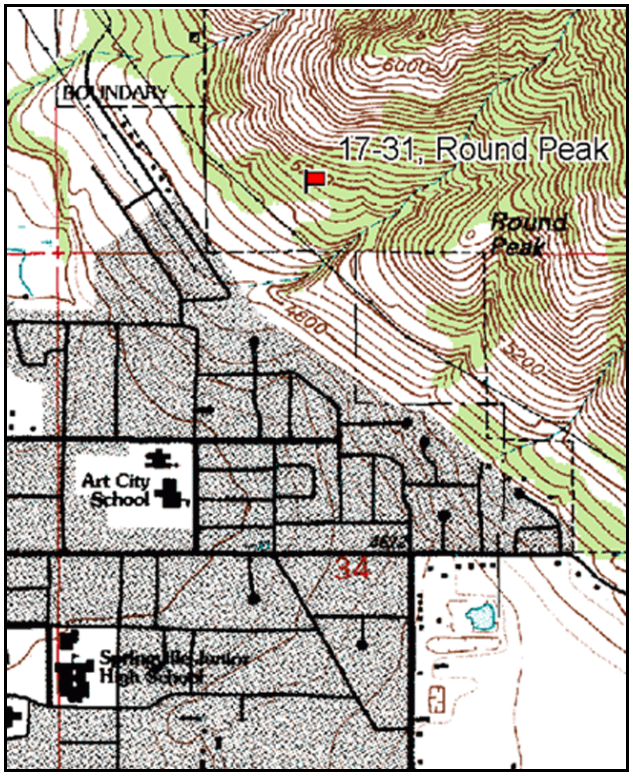
Study site name: Round Peak Vegetation type: Smooth Sumac .

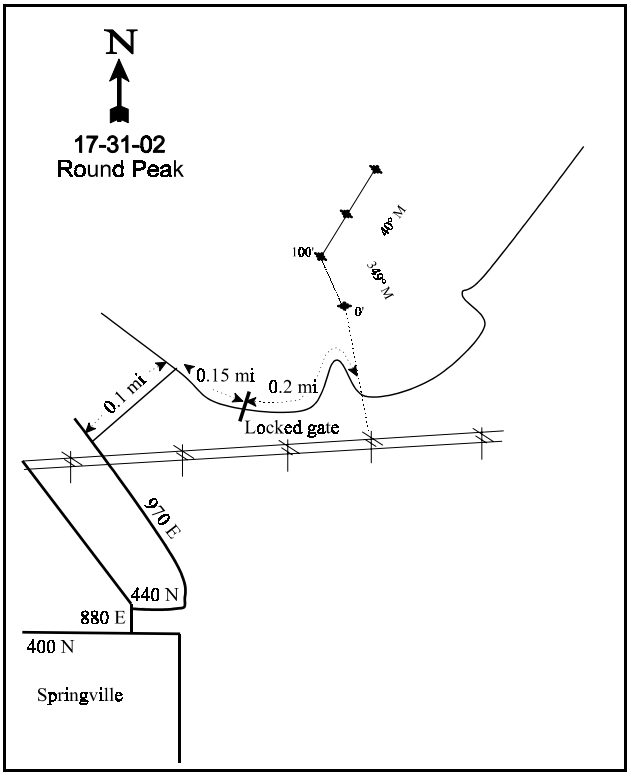
Compass bearing: frequency baseline 349 degrees magnetic (line 2-3 @ 40°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (59ft), line 3 (34 & 71ft).

LOCATION DESCRIPTION

From the town of Springville, take 440 North and 970 East to an intersection at the end of the paved road. Turn right and proceed 0.1 miles to an intersection. Turn right and go southeast along the foothills for 0.15 miles to a locked gate. Walk 0.2 miles along the road and stop even with 2 power poles which are 50 yards south of the road. From the power poles, the 0-foot baseline stake is 95 paces north (343 degrees) marked with browse tag #419.





Map Name: Springville Diagrammatic Sketch

Township 75 , Range 3E , Section 27 GPS: NAD 27, UTM 12S 4447186 N 449811 E

DISCUSSION

Round Peak - Trend Study No. 17-31

The Round Peak study samples a severe winter range site located on national forest land just east of the state fish hatchery in Springville. Like the Spring Canyon study (17-30), this site is typical of the depleted foothills north of Hobble Creek. The study is on a moderately steep (25%-45%), south to southwest facing slope at an elevation of 5,100 feet. Vegetative composition consists of grasses, annual forbs and isolated patches of Gambel oak, Rocky Mountain smooth sumac, and netleaf hackberry. In the summer of 1989, several fawn carcasses were found, most likely winter-killed from the deep snows of the 1988-89 winter. Pellet group quadrat frequency in 1997 showed that elk and deer both had moderate frequencies of 22% and 19% respectively. Quadrat frequency of deer pellet groups was similar in 2002 at 20% but elk pellet groups were less frequent at 8%. A pellet group transect read on site in 2002 estimated 44 deer and 9 elk days use/acre (107 ddu/ha and 23 edu/ha). All pellet groups appeared to be from winter use.

Soils are rocky and highly eroded leaving little exposed bare soil. Parent material appears to be limestone and there are large rock outcrops in the surrounding area. Protective cover is abundant and well dispersed due to bulbous bluegrass and bluebunch wheatgrass. Rock and erosion pavement are abundant and accounted for 35% of the ground cover in 1997 and 37% in 2002. Erosion and soil compaction are especially evident on the many trails interconnecting the area. The erosion condition class was determined as stable in 2002.

Few shrubs are found on the site and combine to produce only about 5% cover. The dominant browse is Rocky Mountain smooth sumac which provided 39% of the browse cover in 1997 and 22% in 2002. Smooth sumac is an invader and/or increaser on disturbed or depleted sites such as this one. Use of this species by deer has been moderate to heavy due to the lack of more preferred shrubs since the site was established in 1983. Estimated population density was about 1,100 stems/acre in 1997 and 2002.

The most numerous shrub is broom snakeweed, an undesirable subshrub that is a known invader and increaser. This plant numbered 3,280 plants/acre in 1997 with numerous seedlings and young plants encountered. Utilization was almost nonexistent and age structure indicated a rapidly expanding population. Drought conditions caused a 57% decline in the density of broom snakeweed in 2002. Other shrubs found on the site include netleaf hackberry, skunkbush sumac, and Gambel oak.

Perennial grass cover is abundant with a cover value of 24% in 1997 and 30% in 2002. Most of the grass cover consists of bluebunch wheatgrass and bulbous bluegrass. Bluebunch wheatgrass provided 46% of the total grass cover in 1997 and 39% in 2002. Bulbous bluegrass, which is a low value short-lived perennial, provided about half of the grass cover in 1997 and 2002. It dries out completely early in the summer and provides fine fuels for wildfire. Annual grasses are present and are represented by several species including cheatgrass, rattlesnake brome, and Japanese brome. Combined they produce little cover.

Forb composition consists of three relatively common perennials and a number of annual weeds. Among the perennial forbs, Louisiana sage, peavine (*Lathyrus brachycalyx*), and yellow salsify are most conspicuous. Annual forbs are represented by storksbill, common ragweed, catchweed bedstraw, and pale alyssum.

1983 APPARENT TREND ASSESSMENT

Apparent trend for both soil and vegetation is declining. The combination of steep slope, poor quality vegetative cover and intense deer use will continue to result in excessive rates of erosion and soil loss. Vegetative composition, with the exception of bluebunch wheatgrass, consists largely of undesirable species typical of disturbed sites. Virtually all shrub species of at least moderate palatability are heavily hedged. In addition, deer pellet groups are very abundant and four carcasses of winter killed deer from the 1982-83 winter were observed in the immediate area.

1989 TREND ASSESSMENT

The soil is rocky and erodible, but stabilized except on the trails. Ground cover percentages are unchanged. Change on this critical winter range site is limited to an increase in sumac. Vigor is generally good with apparently less heavy use than in 1983. Although considered an increaser, sumac provides the bulk of the winter forage on this site. Trend is considered up slightly. Trend for the herbaceous understory is up due to an increase in nested frequency of perennial grasses. Bluebunch wheatgrass has remained stable in frequency, while the poor value perennial, bulbous bluegrass, which was not sampled in 1983 has increased dramatically. Sum of nested frequency for perennial forbs has also increased slightly.

TREND ASSESSMENT
soil - stable (3)
browse - up slightly (4)
herbaceous understory - up (5)

1997 TREND ASSESSMENT

The soil trend is stable but poor. Erosion appears to be minimal due to the abundant vegetative and litter cover. Browse trend is slightly downward. Broom snakeweed density has nearly tripled since 1989. Vigor is still good for the key forage species, sumac. It shows increased utilization and the number of decadent plants has increased. Herbaceous understory trend is stable. Very little change has occurred in the herbaceous understory. Many annual forbs are present and a better composition is desirable.

TREND ASSESSMENT
soil - stable (3)
browse - slightly downward (2)
herbaceous understory - stable (3)

2002 TREND ASSESSMENT

Trend for soil continues to be stable with very little bare ground exposed. Rock and pavement cover is abundant and combined with vegetation and litter, provides adequate protection from most erosion. Trend for browse is stable. Density of sumac has remained similar to 1997. Utilization continues to be moderate to heavy with similar numbers of decadent plants. One positive change in the browse trend is the decline in the density of broom snakeweed (3,280 to 1,400 plants/acre). Trend for the herbaceous understory is slightly down and composition is poor. Nested frequency of bluebunch wheatgrass declined significantly while the frequency of the poor value bulbous bluegrass increased. In addition, the sum of nested frequency for perennial forbs declined substantially. However, most of the decline in nested frequency is due to the drop in frequency of weedy forbs, thistle and ragweed.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 31

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	$_{b}$214	$_{b}$223	$_{b}$247	$_{a}$184	83	84	88	80	11.68	12.51
G	Avena fatua (a)	$_{a}$-	$_{b}$119	$_{a}$-	$_{c}$139	-	49	-	55	-	.85
G	Bromus brizaeformis (a)	-	$_{a}$1	$_{b}$23	$_{a}$-	-	1	9	-	.12	-
G	Bromus japonicus (a)	-	-	21	9	-	-	8	4	.09	.02
G	Bromus tectorum (a)	-	-	$_{a}$121	$_{b}$128	-	-	44	47	.59	.76
G	Poa bulbosa	$_{a}$-	$_{b}$304	$_{b}$257	$_{b}$307	-	94	75	89	12.75	17.63
Total for Annual Grasses		0	120	165	276	0	50	61	106	0.80	1.63
Total for Perennial Grasses		214	527	504	491	83	178	163	169	24.43	30.15
Total for Grasses		214	647	669	767	83	228	224	275	25.23	31.78
F	Alyssum alyssoides (a)	-	-	$_{b}$132	$_{a}$28	-	-	51	13	.35	.06
F	Allium spp.	-	-	4	1	-	-	1	1	.00	.00
F	Ambrosia psilostachya	-	-	$_{b}$126	$_{a}$2	-	-	56	2	2.98	.06
F	Artemisia ludoviciana	$_{c}$54	$_{bc}$36	$_{ab}$20	$_{a}$17	21	19	11	6	.15	.15
F	Astragalus beckwithii	-	-	2	2	-	-	1	1	.15	.38
F	Aster spp.	-	-	3	4	-	-	1	2	.38	.01
F	Calochortus nuttallii	-	-	-	1	-	-	-	1	-	.00
F	Cirsium undulatum	$_{a}$1	$_{ab}$11	$_{b}$28	$_{a}$5	1	6	13	3	.58	.04
F	Cryptantha nana	1	-	-	-	1	-	-	-	-	-
F	Cruciferae	$_{a}$-	$_{b}$10	$_{a}$-	$_{a}$-	-	6	-	-	-	-
F	Cymopterus spp.	$_{a}$-	$_{a}$-	$_{c}$17	$_{ab}$6	-	-	7	2	.49	.33
F	Epilobium brachycarpum (a)	-	-	5	-	-	-	3	-	.01	-
F	Erodium cicutarium (a)	-	-	$_{a}$13	$_{b}$56	-	-	4	19	.05	.41
F	Erigeron divergens	1	-	-	-	1	-	-	-	.00	-
F	Eriogonum racemosum	-	-	-	3	-	-	-	3	-	.01
F	Galium aparine (a)	-	-	$_{b}$37	$_{a}$15	-	-	16	9	.18	.04
F	Grindelia squarrosa	-	-	$_{a}$-	$_{b}$14	-	-	-	6	-	.25
F	Helianthus annuus (a)	$_{a}$-	$_{b}$19	$_{a}$3	$_{a}$-	-	9	2	-	.01	-
F	Holosteum umbellatum (a)	-	-	32	26	-	-	14	11	.07	.05
F	Lathyrus brachycalyx	54	62	57	54	19	26	21	20	3.20	3.63
F	Lappula occidentalis (a)	-	-	$_{a}$1	$_{b}$25	-	-	1	10	.00	.05
F	Lithospermum incisum	$_{a}$18	$_{b}$105	$_{a}$8	$_{a}$6	6	48	4	2	.22	.01
F	Lithospermum ruderale	$_{a}$5	$_{b}$16	$_{a}$10	$_{a}$-	2	8	3	-	.01	-
F	Macheranthera commixta	3	-	-	-	1	-	-	-	-	-
F	Phlox longifolia	4	5	11	2	1	4	5	2	.02	.06
F	Taraxacum officinale	-	-	-	2	-	-	-	1	-	.00
F	Tragopogon dubius	$_{b}$29	$_{a}$-	$_{a}$5	$_{a}$3	14	-	2	2	.04	.01

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
Total for Annual Forbs		0	19	223	150	0	9	91	62	0.68	0.63
Total for Perennial Forbs		170	245	291	122	67	117	125	54	8.25	4.98
Total for Forbs		170	264	514	272	67	126	216	116	8.94	5.61

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 17 , Study no: 31

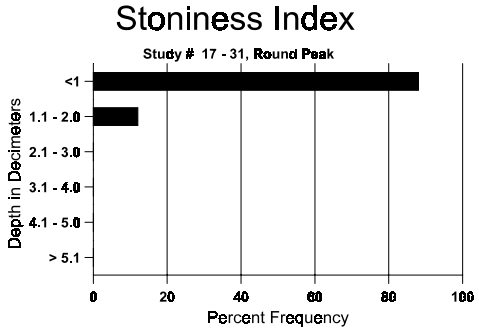
Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Celtis reticulata	3	2	1.88	2.36
B	Gutierrezia sarothrae	31	24	1.57	1.61
B	Rhus glabra cismontana	35	30	2.25	1.10
Total for Browse		69	56	5.71	5.08

BASIC COVER --
Herd unit 17 , Study no: 31

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	343	344	.75	9.00	39.23	46.85
Rock	316	319	30.25	26.50	22.02	22.23
Pavement	269	275	22.00	24.50	12.78	14.84
Litter	385	373	44.00	37.50	29.04	24.94
Cryptogams	51	12	.50	0	.37	.02
Bare Ground	146	73	2.50	2.50	3.45	.62

SOIL ANALYSIS DATA --
Herd Unit 17, Study no: 31, Round Peak

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
17.1	53.8 (17.7)	7.3	36.9	38.4	24.7	2.0	14.2	256.0	1.0



PELLET GROUP FREQUENCY --
Herd unit 17 , Study no: 31

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'97	'02	'02	'02
Rabbit	3	-	-	-
Elk	22	8	122	9 (23)
Deer	19	20	566	44 (107)

BROWSE CHARACTERISTICS --
Herd unit 17 , Study no: 31

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Celtis reticulata																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	1	-	-	6	-	-	7	-	-	-	140			7
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	-	-	1	-	33			1
	97	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	39	26	1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40	80	225	2
	02	-	-	-	1	-	-	-	-	-	1	-	-	-	20	28	53	1
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+ 0%
'89	00%	00%	100%	+45%
'97	00%	00%	00%	-33%
'02	00%	00%	50%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	33	Dec:	0%
	'89	33		0%
	'97	60		0%
	'02	40		50%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	11	-	-	-	-	-	-	-	-	11	-	-	-	366			11
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	44	-	-	-	-	-	-	-	-	44	-	-	-	880			44
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	30	-	-	-	-	-	-	-	-	30	-	-	-	1000			30
	89	5	-	-	-	-	-	-	-	-	5	-	-	-	166			5
	97	67	-	-	-	-	-	-	-	-	54	-	13	-	1340			67
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	24	-	-	-	-	-	-	-	-	24	-	-	-	800	7	4	24
	89	22	-	-	-	-	-	-	-	-	17	1	4	-	733	8	10	22
	97	97	-	-	-	-	-	-	-	-	97	-	-	-	1940	9	15	97
	02	63	-	-	-	-	-	-	-	-	63	-	-	-	1260	9	11	63
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	4	-	-	-	-	-	-	-	-	1	1	2	-	133			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	220			11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-43%
'89	00%	00%	19%	+69%
'97	00%	00%	08%	-57%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	1800	Dec:		0%
'89	1032			13%
'97	3280			0%
'02	1400			9%

Mahonia repens																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	4	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	0		-
'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	0		-

Rhus glabra cismontana																		
S	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	1	1	1	-	-	-	-	-	-	3	-	-	-	100			3
	89	6	7	2	-	-	-	-	-	-	12	3	-	-	500			15
	97	4	2	2	-	-	-	-	-	-	8	-	-	-	160			8
	02	2	-	7	-	-	-	-	-	-	9	-	-	-	180			9
M	83	-	7	33	-	-	-	-	-	-	40	-	-	-	1333	50	34	40
	89	19	23	8	-	-	-	-	-	-	38	12	-	-	1666	66	41	50
	97	1	24	8	-	-	-	-	1	-	34	-	-	-	680	49	37	34
	02	12	4	11	-	2	-	7	1	-	37	-	-	-	740	31	23	37
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	1	1	-	-	-	-	-	-	4	-	-	-	133			4
	97	-	7	4	-	-	2	-	-	-	11	-	-	2	260			13
	02	2	-	5	-	-	-	2	-	2	5	-	-	6	220			11
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	200			10
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	300			15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	19%	79%	00%	+38%
'89	45%	16%	00%	-52%
'97	60%	29%	04%	+ 4%
'02	11%	44%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	1433	Dec:	0%
	'89	2299		6%
	'97	1100		24%
	'02	1140		19%